



Warheads and Energetics Technology Center

Tomorrow's Lethality



WETC Description

- ARL and TACOM-ARDEC Partnership
- Research and Development
 - Warheads for Missiles, Ammunition & Active Protection Systems
 - Explosives
 - Solid Propellants
 - Pyrotechnics
 - Fuzing

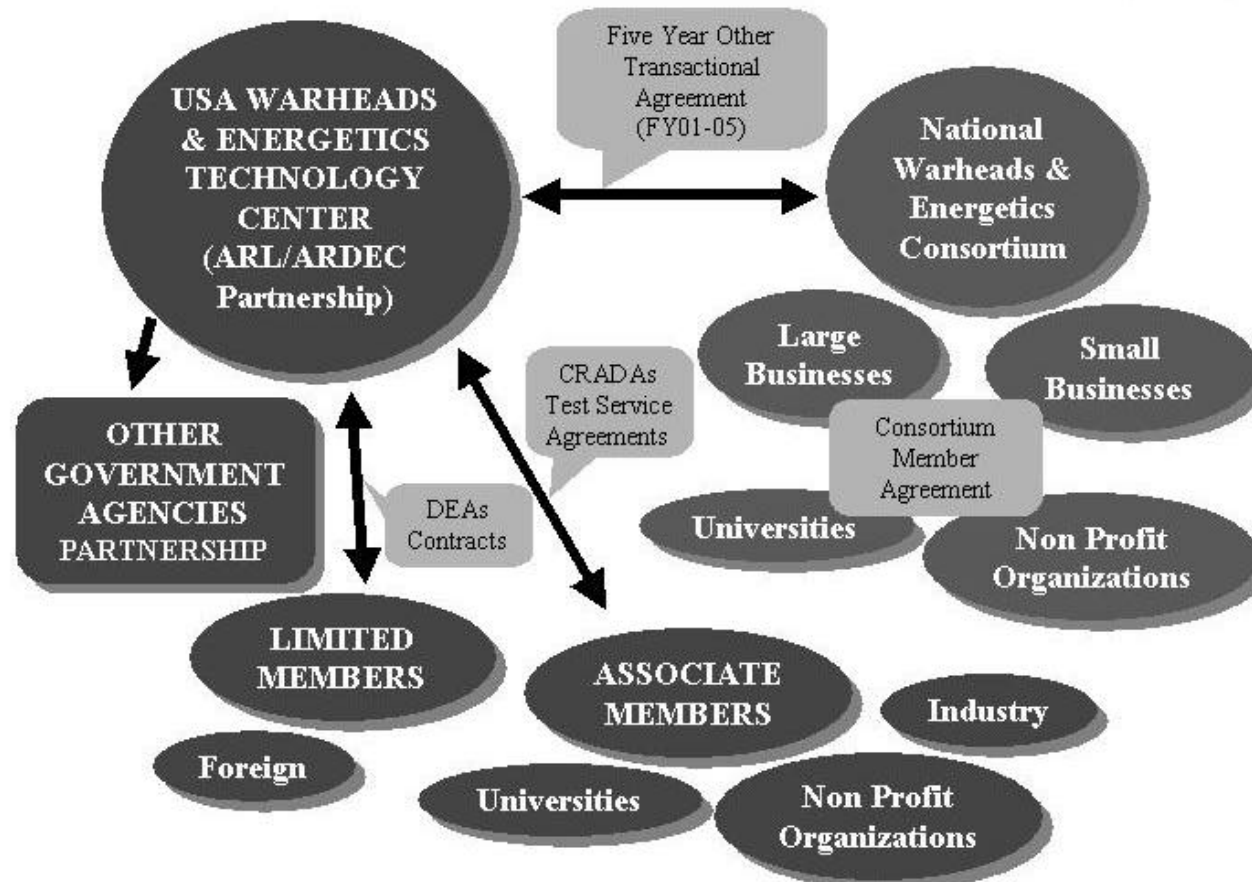


Mission

- Provides rapid transition of new lethality and protection technology for the Future Combat System
 - Focuses the efforts of Government, Industry and Academia
 - Coordinates and Harmonizes projects through the Warheads & Energetics Master Plan and the National Warheads and Energetics Consortium (NWECC)

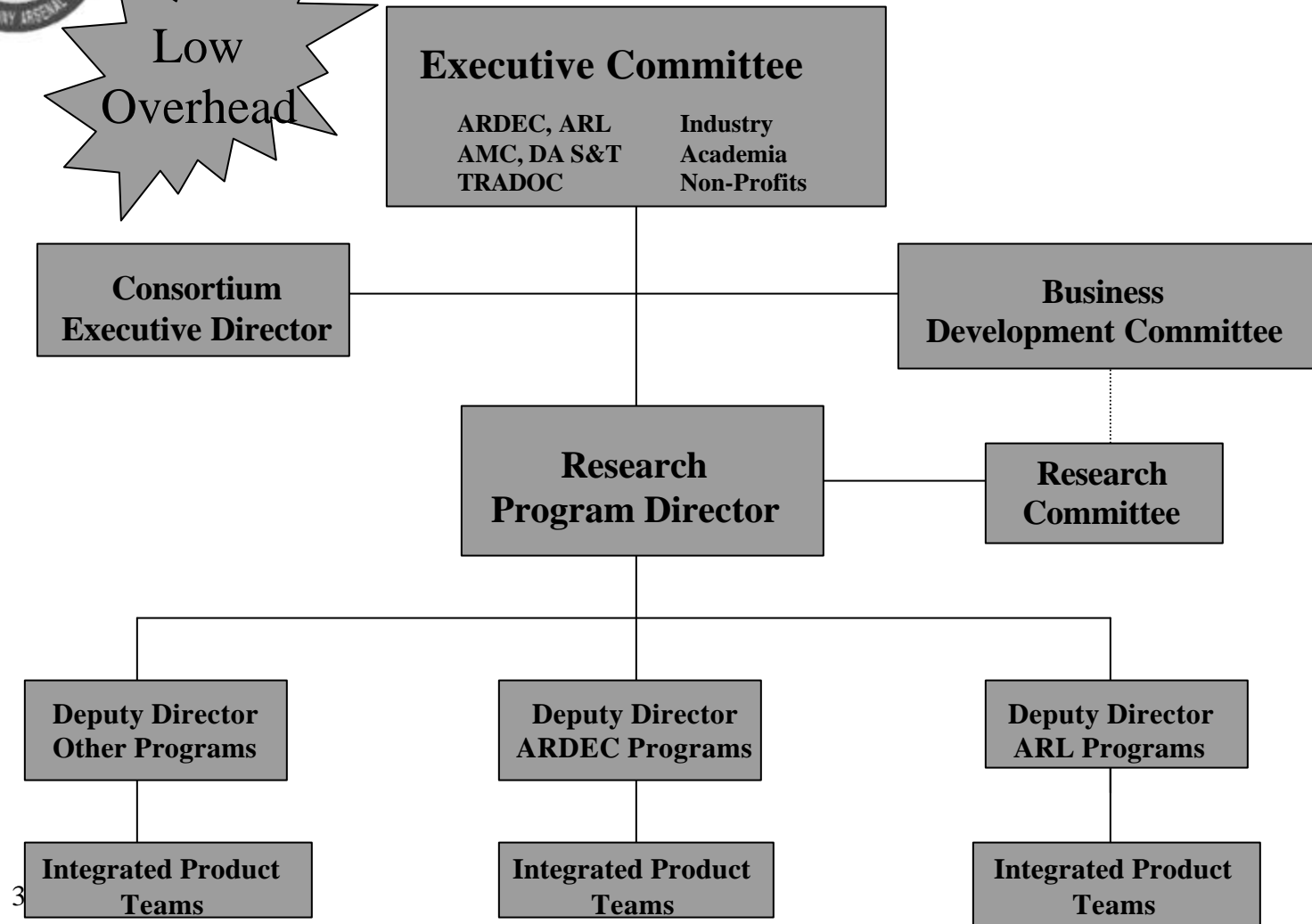


US ARMY WARHEADS AND ENERGETICS TECHNOLOGY CENTER (WETC)





Organization





National Warheads and Energetics Consortium (NWECC)

- 35 US Industry, University, and Not-For-Profit Partners
- Collaborative Agreement
- Partners Share Facilities, Expertise, and Funds in Integrated Teams
- Each Partner provides Matching Funds under the Master Other Transaction Agreement

138% Return





WETC – NWECC Partnering Across America



NWECC Members:

Aerojet
ARMTEC
Alliant Tech
American Ordnance
Applied Ordnance
Business Plus
BAE Systems
Battelle

Bulova Tech
CFD Research
Combustion Propulsion
& Ballistic Technology
Climax Molybdenum Co.
DE Technologies
Day & Zimmerman
Eaton Associates

EME
Enig Assoc.
Fluorochem
GEO-CENTERS
General Dynamics
General Sciences
MPR Inc.
M. Bruns Corp.

NJIT
Primex
Penn State Univ.
Quantic Industries
SRI International
Talley Defense
Textron Systems
Thermo Technologies

Thiokol
Univ. of MO – Rolla
Veritay Technologies

● Picatinny Arsenal – WETC
and ARL



FY 02 Members

- Accurate Energetics Systems
- Atlantic Research Corporation
- Cortec Corporation
- Franklin Applied Physics
- Hi-Shear Technology corporation
- Kaman Aerospace Corporation
- KDI Precision Products
- Nanomat Inc



New Members Continued

- Pacific Scientific Energetic Materials
- Sandia National Laboratory
- Technology Acceleration Group
- Pratt & Whitney United Technology
- TRW Space & Technology
- Southwest Research Institute



Program Status FY00

- Individual Other Transactions
 - 50 Project Proposals received
 - 20 Projects awarded
- WETC officially opened 16 May 2000
- NVEC officially opened 15 Aug 2000



FY 01 Status

- Expect \$5-6 mil for projects.
- Research Committee met in Oct '00.
- Master Plan published Dec '00.
- Request for Project Proposals 30 Nov '00.
- Executive Committee met - 23 Jan 01
- Proposals delivered - 31 Jan 01
- Proposals awarded - 2 Mar 01



FY 01 Program Status

- Received 40 proposals
- Awarded 8 for \$2.5 mil
- Incrementally funded 9 existing projects for \$2.9 mil



Intellectual Property

- Governed by Article VI of Consortium Member Agreement and Articles VII-IX of Master Other Transaction
- Government receives Gov't Unlimited Rights or Gov't Purpose Rights if our Financial Contribution is 50% or More of the Total Cost of Development.



Warheads

The long-range research and development objectives are to develop and demonstrate technology for a future generation of warheads utilizing EFP, Shaped Charge and other concepts which will deliver twice the performance, are half the size and have multipurpose capabilities over a wide range of target types while reducing vulnerability. It is also for the development and demonstration of technology for Electronic Safe and Arm Devices for fuzing Shaped Charge and EFP warheads which will provide multipurpose capabilities.



FY00 Warheads Projects



Company	Gov't Cost	Cost Share	Project Title
American Ordnance	\$169	\$0	Shaped Charge Fabrication, Explosive Loading and Testing.
Primex	\$477	\$46	Optimize K-Charge Shaped Charge Performance Using PAX-12 Explosive
Textron	\$595	\$0	Optimize Performance of X-Caliber Explosively Formed Penetrator
Aerojet	\$522	\$575	Demonstrate Coupled and De-coupled Explosively Formed Penetrators
Primex-OTI	\$448	\$255	Demonstrate Long Stand-off Shaped Charge Warhead



Explosives

The long-range research and development objective is development and demonstration of explosives for future warheads with 50-200% more energy than LX14 and reduced sensitivity to enhance insensitive munitions compliance, which are affordable, environmentally friendly and easy to demilitarize.



FY00 Explosives Projects



Company	Gov't Cost	Cost Share	Project Title
Thiokol	\$223	\$0 (\$200 disallowed)	Develop High Energy Explosive Formulations
Thiokol	\$178	\$0 (\$180 disallowed)	Develop High Blast Aluminized Explosives
GEO-CENTERS	\$200	\$10	Improved Manufacture of CL-20
GEO-CENTERS	\$198	\$10	Develop Press Loadable CL-20 and Nanophase Aluminum
Univ of Chicago	\$116	\$74	Synthesis of Novel Compounds
Thiokol	\$96	\$0 (\$25 disallowed)	Develop Eutectics for the Melt Pour of TNAZ Explosives
Flouro-chem	\$100	\$0	Develop Azido Nitro Plasticizers



Propellants

The long-range research and development objective is development and demonstration of higher energy propellants and propulsion systems to provide a 25% increase in propulsion performance. This can be defined as a 25% increase in muzzle energy over that of JA2 in the M829A2 configuration. This will be accomplished in five main areas: 1) utilizing new or novel ingredients, 2) developing new propellant formulations (including initiation-specific, e.g. plasma propellants), 3) improved Combustible Cartridge Cases (CCC), 4) novel charge designs, and 5) improved ignition-ignitability technologies. These areas of emphasis will provide increased muzzle energy while reducing gun tube wear, improving vulnerability, and assuring insensitive munitions compliance in configured loads.



FY00 Propellants Projects



Company	Gov't Share	Cost Share	Project Title
Thiokol	\$130	\$0 (\$170 disallowed)	Development and Testing of Advanced Artillery and Tank Gun Propellant.
Aerojet	\$165	\$16.5	Development of new ETPE energetic ingredients
Penn State University	\$52	\$29	Development of a Family of New High Energy Propellants
Thiokol	\$214	\$0	Develop ETPE Combustible Cartridge Case
ARMTEC	\$180	\$183	Develop Improved Combustible Cartridge Case
Primex	\$121	\$78	Development of High Density Charge
Alliant	\$40	\$40	Test Dual Layered Stick Propellant
Veritay	\$83	\$10	Investigate Smart Consolidated Propelling Charge

3/20/2001



Pyrotechnics

The long-range research and development objective is the demonstration and development of insensitive decoy and screening munitions/systems as part of the survivability system for future combat systems throughout the electromagnetic spectrum.



FuZing

- Long Range FuZing Objectives will be determined by the Government Research Subcommittee prior to June Research Committee meeting.
- White Papers will be submitted in early June.



Unfunded Requirements

- Warheads – 6.2 \$4.6
- Explosives – Nano 6.2 \$4.5
- Objective Force Dismounted Combat Lethality – 6.3 \$3.4
- Propellants & Survivability – 6.3 \$4.1
- Multi-Functional Integrated Fuzing for FCS – 6.3 \$1.2



Summary

- The WETC supports the Army Tech Base.
- The Master Other Transaction offers a flexible and quick means to award projects.
- The Master Planning Process focuses Government, Industry and Academia resources on needed technology.
- Together we can make a stronger case for more resources.